

Description of a new subspecies of *Chicoreus (Triplex) cnissodus cnissodus* (Euthyme, 1889) (Gastropoda, Muricidae) from Sri Lanka

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ABSTRACT A new subspecies *Chicoreus (Triplex) cnissodus ceylonensis* is described from Sri Lanka. It is compared with the nominotypical subspecies *C. (T.) cnissodus cnissodus* (Euthyme, 1889) from The Philippines, Vietnam, Taiwan and Japan and with *C. (T.) peledi* Vokes, 1978 from the northern part of the Red Sea. The geographical distribution area of the new subspecies is restricted to Sri Lanka and southeastern India.

INTRODUCTION

The new subspecies here described was compared with *Chicoreus (Triplex) cnissodus cnissodus* by Houart (1992: 78) but was not separated at that time. However, after new specimens were examined, and none of the typical form having been collected in that geographical area, plus constant morphological differences of the shell characters being observed, it is here described as a geographical subspecies.

Methods for morphological taxonomy

The characters here used to describe the shell morphology are the general aspect of the shell, the shape and the size, the color, the shape of the spire and the number of protoconch and teleoconch whorls, the description of the protoconch, the shape of the teleoconch whorls and the description of the suture and of the subsutural band, of the axial and of the spiral sculpture, of the aperture and of the siphonal canal. The species description is based on all the examined specimens.

Abbreviations

Convex part of teleoconch whorl and siphonal canal

ab: abapical (or abapertural);
 abis: abapical infrasutural secondary cord (on subsutural ramp);
 ABP: abapertural primary cord on the siphonal canal;
 ad: adapical (or adapertural);
 adis: adapical infrasutural secondary cord (on subsutural ramp);
 ADP: adapertural primary cord on the siphonal canal;
 IP: infrasutural primary cord (primary cord on subsutural ramp);
 MP: median primary cord on the siphonal canal;
 P: primary cord;
 P1: shoulder cord;
 P2-P6: primary cords of the convex part of the teleoconch whorl;
 s: secondary cord;
 s1-s5: secondary cords of the convex part of the teleoconch whorl (example: s1 = secondary cord between P1 and P2; s2 = secondary cord between P2 and P3, etc.);
 t: tertiary cord.

Aperture

D1 to D6 abapical denticles;
ID infrasutural denticle.

Table 1. Terminology used to describe the spiral cords (after Merle, 2001 and 2005) (Fig. 2). Terminology in parentheses: erratic feature

Other abbreviations

EK: collection of Evgeniy Kozlov

RH: collection of the author

juv.: juvenile

sp.: specimen taken alive

Repository

MNHN: Muséum national d'Histoire naturelle,
Paris, France.

SYSTEMATICS

Family **Muricidae** Rafinesque, 1815

Subfamily **Muricinae** Rafinesque, 1815

Genus ***Chicoreus*** Montfort, 1810

Subgenus ***Triplex*** Perry, 1810

Type species by monotypy: *Triplex foliatus* Perry, 1810 (= *Murex palmarosae* Lamarck, 1822), Indo-West Pacific.

Chicoreus (Triplex) cnissodus ceylonensis, n. subsp. Figs 1, 2-3, 6-11, Table 3

Chicoreus cnissodus — Houart, 1992: 78 (in part), fig. 366 (only); Subba Rao & Surya Rao, 1993: 19, text fig. 5, pl. &, figs 7, 8.

Type Material. Holotype MNHN IM-2000-30032; 1 paratype IRSNB MT.3201/IG.32888; 2 paratypes R. Houart.

Type Locality. Trincomalee, Sri Lanka, 6-12 m, 1983.

Material Examined. Trincomalee, Sri Lanka (holotype MNHN and 2 paratypes R. Houart); Tuticorin, southeastern India, 1 paratype IRSNB; Keelakarai (Kilakarai), southeastern India, 25-30 m, 2 sp. coll. E. Kozlov.

Distribution. Sri Lanka, the Bay of Bengal (northeast of Madras) and southeastern India, in 6-30 m (Fig. 1).

Description. Shell medium sized for the subgenus, up to 81.4 mm in length at maturity (coll. E. Kozlov). Length/width ratio 1.9-2.0. Lanceolate, heavy, nodose. Subsutural ramp broad, weakly sloping, convex. Light tan or brown with darker colored bands, approximately between suture and s1, P3-P4 and P5-P6. All spiral cords topped with brown, extending on axial varices. Aperture white or light cream. Spire high with approximately 3 protoconch whorls (all protoconchs examined partially eroded). Teleoconch of 8 or 9 broad, strongly convex, weakly shouldered, nodose whorls. Suture of whorls impressed. Protoconch small, conical; terminal lip unknown. Axial sculpture of teleoconch whorls consisting of moderately high, narrow, nodose ribs and high, narrow, rounded, spinose varices. Each varix with short, frondose, broad, open, primary and secondary spines. First whorl with 4 or 5 narrow ribs and forming first varix; second to last whorl with 3 varices and 2 or 3 intervariceal, narrow ribs. Intervariceal ribs decreasing in strength and height abapically comparatively to size of whorls. Spiral sculpture of low, rounded, narrow, granulose, primary, secondary and tertiary cords and narrower threads. Subsutural ramp with adis, IP and abis from first to last teleoconch whorl with additional threads

starting from fourth whorl. Other spiral cords of last whorl consisting of P1, t, s1, t, P2, t, s2, t, P3, t, s3, t, P4, s4, P5, (s5), P6, s6, t, t, ADP, MP, ABP, with additional narrow threads on the whole shell (Fig. 3). Last teleoconch whorl of adult shell with P1-P5 variceal spines increasing in length and width abapically with exception of shorter P6. Aperture broad, broadly ovate. Columellar lip narrow, smooth with strong parietal tooth at adapical extremity, rim partially erect, adherent adapically. Anal notch deep,

narrow. Outer lip weakly erect, crenulated with weak or moderately strong, elongate denticles within: ID split, D1-D4 split, D5, D6 with D5 occasionally split (Fig. 2). Siphonal canal short, 28-31% of total shell length, broad, weakly abaxially curved, dorsally recurved, narrowly open. Operculum unknown.

Etymology. From the type locality, Ceylon, the ancient name of the Republic of Sri Lanka.



Figure 1. Geographical distribution

- *Chicoreus (Triplex) peledi* Vokes, 1978
- ◆ *Chicoreus (Triplex) cnissodus ceylonensis* n. subsp.
- *Chicoreus (Triplex) cnissodus cnissodus* (Euthyme, 1889)

Remarks. *Chicoreus (Triplex) cnissodus ceylonensis* differs from *C. (T.) cnissodus cnissodus* (Figures 4-5, 12-15) in having shorter spines, a comparatively higher spire, a shorter siphonal canal and a different color pattern. The length/width ratio in adult shells of *C. (T.) cnissodus cnissodus* varies from 1.5 to 1.8 compared with 1.8 to 2.0 in *C. (T.) cnissodus ceylonensis* (less in young specimens in both subspecies). The spire in *C. (T.) cnissodus cnissodus* is 40-45% of the total adult shell length and the siphonal canal 34-38% compared to 44-49% and 28-31% in *C. (T.) cnissodus ceylonensis* (Tables 2 and 3).

Juveniles of the new subspecies tends to have a longer P1 spine and a longer siphonal canal relative to the height of the spire. Such a young shell is illustrated here (Figure 10) and

was also illustrated in Suba Rao and Surya Rao (1993: pl. 1, fig. 7). This longer spine is also obvious in the early teleoconch whorls of the adult shells. However, the longer P1 spine and the longer siphonal canal are also observed in juveniles of *C. (T.) cnissodus cnissodus* (Figure 15) and relatively reduced in adults (see also Tables 2 and 3).

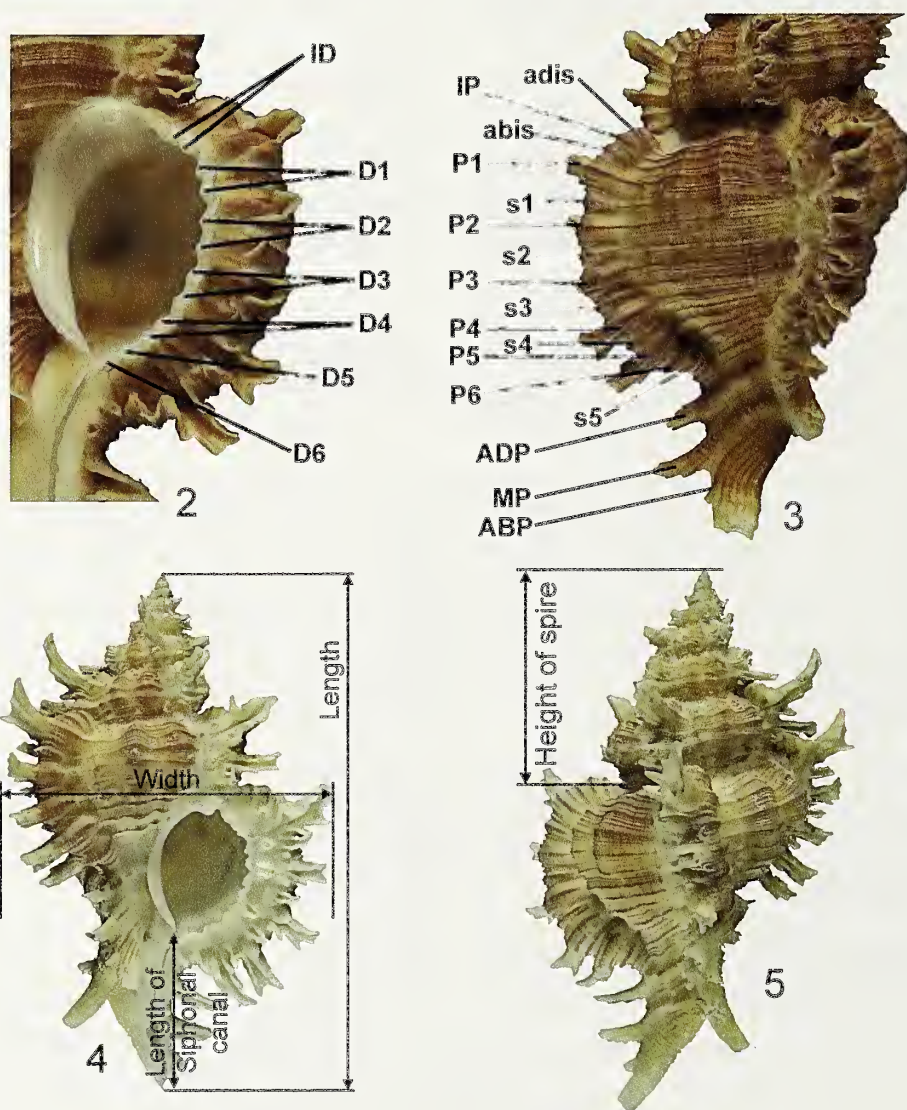
The new subspecies also resembles *Chicoreus (Triplex) peledi* Vokes, 1978 (Figure 16), especially by having a similar ground color and similar darkly pigmented spiral bands. However, *C. (T.) cnissodus ceylonensis* differs constantly in having a comparatively higher spire, a shorter siphonal canal, a more globose shell vs angular in *C. peledi*, less pronounced intervariceal ridges and a relatively narrower aperture with narrower columellar lip.

Locality	Total length	Total width (including spines)		Height of spire		Length of siphonal canal	
			L/W ratio		spire vs. shell length		canal vs. shell length
Taiwan (RH)	87.2	51.8	1.7	35.5	41%	32.2	37%
Taiwan (RH)	76.1	46.3	1.6	32.8	43%	28.1	37%
Taiwan (RH)	78.3	47.4	1.7	35.1	45%	27.1	35%
Taiwan (RH)	81.8	45.3	1.8	36.5	45%	28.0	34%
Taiwan (RH)	76.2	44.1	1.7	32.4	43%	26.9	35%
Taiwan, off An Ping (RH)	70.6	46.2	1.5	29.0	41%	25.5	36%
Taiwan, off An Ping (RH)	71.1	41.6	1.7	28.9	41%	25.0	35%
Japan, Minabe, Wakayama Pref. (RH)	65.2	44.0	1.5	26.2	40%	24.3	37%
Unknown (RH)	76.2	42.8	1.8	31.7	42%	27.3	36%
Japana, Susami, Kii (RH)	72.1	45.1	1.6	30.3	42%	26	36%
China Sea (RH)	84.2	52.5	1.6	34.0	40%	32.4	38%
Philippines, Bohol, Balicasag Is. (RH)	84.7	55.0	1.5	34.7	41%	31.4	37%
<i>Philippines, Mindanao (RH) (juv.)</i>	<i>28.5</i>	<i>21.8</i>	<i>1.3</i>	<i>10.3</i>	<i>36%</i>	<i>11.3</i>	<i>40%</i>
<i>Philippines, Mactan Is. (RH) (juv.)</i>	<i>22.8</i>	<i>16.2</i>	<i>1.4</i>	<i>8.7</i>	<i>38%</i>	<i>8.6</i>	<i>38%</i>

Table 2. Shell measurements (in mm) and count data for *Chicoreus (Triplex) cnissodus cnissodus* (Euthyme, 1889) (juveniles in italics)

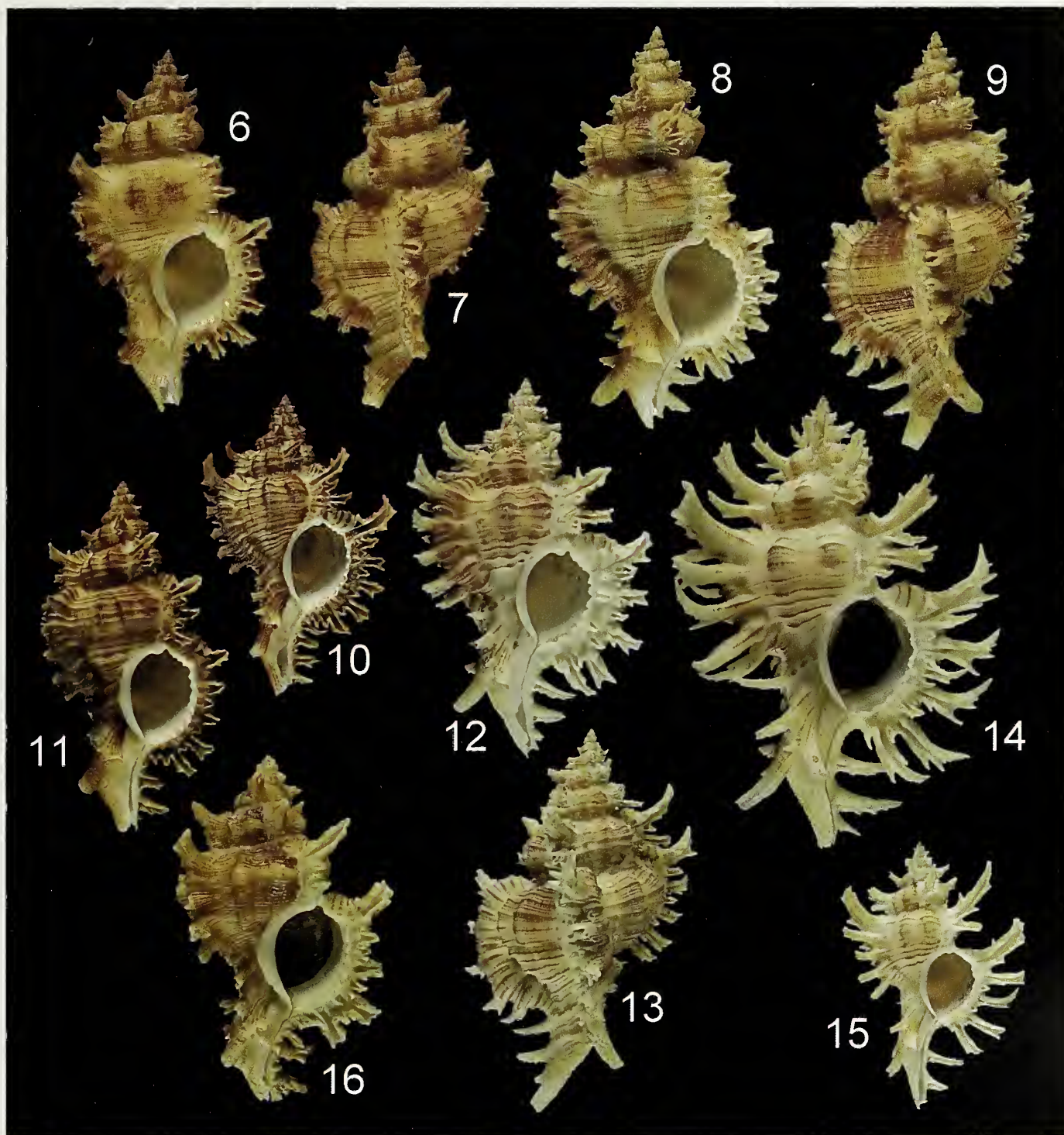
Locality	Total length	Total width (including spines)		Height of spire		Length of siphonal canal	
			L/W ratio		spire vs. shell length		canal vs. shell length
Sri Lanka, Trincomalee (holotype)	68.7	36.0	1.9	31.8	46%	19.5	28%
Sri Lanka, Trincomalee (paratype RH)	79.4	42.4	1.9	38.4	48%	22.6	28%
India, Tuticorin (RH)	67.3	34.0	2.0	30.2	45%	21.1	31%
India, Keelakarai (EK)	81.5	41.4	2.0	40.2	49%	23.0	28%
India, Keelakarai (EK)	62.0	34.4	1.8	27.4	44%	18.8	30%
<i>Sri Lanka, Trincomalee (paratype RH) (juv.)</i>	<i>53.9</i>	<i>34.2</i>	<i>1.6</i>	<i>22.4</i>	<i>42%</i>	<i>17.8</i>	<i>33%</i>

Table 3. Shell measurements (in mm) and count data for *Chicoreus (Triplex) cnissodus ceylonensis* n. subsp. (juvenile in *italics*)



Figures 2-5. Terminology.

Figure 2. Apertural denticles terminology of *Chicoreus (Triplex) cnissodus ceylonensis*; **3.** Spiral cords terminology of *Chicoreus (Triplex) cnissodus ceylonensis*; **4-5.** *Chicoreus (Triplex) cnissodus cnissodus* (shell measurements used in study)



Figures 6-11. *Chicoreus (Triplex) cnissodus ceylonensis* n. subsp.; 6-7. Sri Lanka, Trincomalee, 6-12 m, 1983, 68.7 mm, holotype MNHN IM-2000-30032; 8-9. Sri Lanka, Trincomalee, 79.4 mm, paratype RH; 10. Sri Lanka, Trincomalee, 53.9 mm (juvenile), paratype RH; 11. India, Tuticorin, 67.3 mm, paratype IRSNB MT.3201/IG.32888; 12-15. *Chicoreus (Triplex) cnissodus cnissodus* (Euthyme, 1889); 12-13. Taiwan, An Ping, 71.1 mm, RH; 14. Philippines, Bohol, Balicasag Is., 140 m, 84.7 mm, RH; 15. Taiwan, An Ping, 42.2 mm (juvenile), RH; 16. *Chicoreus (Triplex) peledi* Vokes, 1978, Israel, Gulf of Aqaba, Eilat, 40 m, April 1980, 65.6 mm.

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Taxonomic note - new species: *Latiaxis nippooleifera* Chino, 2014 This attractive new species of *Latiaxis* was named from eleven specimens found on Norfolk Ridge, New Caledonia. Chino's etymology refers to the sharp yellow color characteristic of the shell which is reminiscent of the color



***Latiaxis nippooleifera* (Chino, 2014)**

of a spring wild mustard flower in Japan, *Brassica rapa* var. *nippo-oleifera* (Linnaeus, 1758). A lovely species compared with *L. hayashii*, *L. pilsbryi*, and *L. latippinnatus*. (Chino, M. (2014) A new species of *Latiaxis* (Neogastropoda: Muricidae) from New Caledonia and the Norfolk Ridge. *Visaya* 4(2): 9-14.)

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